The heat loss takes place continually during both the heating and cooling cycles. This has suggested the possibility of recovering a portion of this heat by enclosing the chambers, with an air space all around them, in a sheet-iron housing arranged in such a manner that the air supply for the furnace is drawn from the highest and hottest portion of the enclosure. This housing should provide sufficient room to permit the inspection of the chamber walls.

All regenerative furnaces are more or less subject to explosions at reversal. These explosions crack and otherwise damage the brickwork, producing air leakage which reduces the temperature of the waste gases and increases their volume. The effect of this leakage is intensified when a strong draft must be used to pull the waste gases out of the furnace. The intensity of the draft depression increases progressively from the port to the base of the stack; and the seriousness of the air infiltration necessarily increases as the draft depression increases, the greatest amount of air entering the system through the walls of the flues leading to the chimney. Leakage outward undoubtedly occurs with both the air and the gas; but, as the pressure within the flues is extremely low, the volume lost is much less than the infiltration through the same wall. The only way of preventing air from leaking into the flues is to provide them with a covering of sheet steel of suitable thickness. This will, at the same time, necessitate a consideration of the fact that an explosion within a tight casing may be much more violent than one occurring in a brick flue. Such a casing and the heat insulation of these flues will increase considerably the amount of heat available for the generation of steam.

One of the factors brought out in the preceding computation was the draft depression necessary to pull a proportionate amount of the waste gases through the gas-port of the furnace. This

indicates that a better-working furnace would result from having large uptakes through which the waste gases would pass with a low velocity down to the cinder pockets. A further advantage

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resulting from this increase in uptake area on the outgoing end will be a greatly increased efficiency of the cinder pocket in

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catching cinder and other material which is carried out of the furnace and thus increasing the life of the regenerators. The carrying power of a flowing stream varies as the sixth power of its velocity. That is, when the velocity is doubled, the weight of